

2001 ACCESSORIES & EQUIPMENT**Wiper/Washer Systems - Blazer, Bravada, Jimmy, Sonoma & S10 Pickup****DESCRIPTION & OPERATION**

WARNING: Vehicles are equipped with air bag supplemental restraint system. Before attempting ANY repairs involving steering column, instrument panel or related components, see **SERVICE PRECAUTIONS** and **DISABLING & ACTIVATING AIR BAG SYSTEM** in appropriate **AIR BAG RESTRAINT SYSTEMS** article.

FRONT WIPER/WASHER SYSTEM

Wiper/washer system is a pulse delay system. System uses a permanent-magnet, positive-park, 2-speed wiper motor. System includes LOW, HIGH, DELAY, MIST and WASH modes. Variable resistor in wiper switch adjusts amount of current to a delay module attached to wiper motor. Delay module controls current to wiper motor.

REAR WIPER/WASHER SYSTEM

System uses a positive-park, single-speed wiper motor. Wiper arm is attached directly to motor. In addition to HIGH, LOW and OFF positions, switch on instrument panel has momentary WASH position. Washer pump is located in engine compartment, inside washer fluid reservoir.

COMPONENT LOCATIONS**COMPONENT LOCATIONS**

Component	Location
Front Washer Pump	Under Hood, Inside Washer Fluid Tank
Front Wiper Motor Module	Under Cover On Front Wiper Motor Assembly
Front Wiper/Washer Switch	On Steering Column, Part Of Multifunction Switch
Rear Washer Pump	Under Hood, Inside Washer Fluid Tank
Rear Wiper Motor Controller	Integral Part Of Rear Wiper Motor
Rear Wiper/Washer Switch	On Instrument Panel, Right Of Steering Wheel

ADJUSTMENTS

If wipers miss or shudder when wiping and windshield and wiper blades have been cleaned, check wiper arm tip pressure. Stop wipers at mid-wipe position. Remove wiper blade assembly. Attach tension scale to wiper blade attaching pin, lift arm about 1/2" from windshield. Tip pressure should be 29-34 ozs. (.82-.96 kg) on drivers side and 21-25 ozs.

(.59-.70 kg) on passenger side.

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Before performing any test on wiper/washer system, check the following items to eliminate common problems:

- Check that wiper system related fuses are okay.
- Check ground point located behind left kick panel, near fuse box.
- Check wiper arm and blade condition.
- If some (but not all) delay or low speeds are inoperative, replace multifunction switch.
- Ensure aftermarket equipment is not improperly installed and interfering with operation of wiper/washer system.

Correct any obvious problems before proceeding with system diagnosis. Perform system operation check. See **SYSTEM OPERATION CHECK**.

SYSTEM OPERATION CHECK

Front Wiper System

1. Turn ignition switch to RUN position. Press washer button to ON position. Wipers should run at low speed. Washer should spray windshield for as long as button is held. After releasing switch, washer should stop, wipers should sweep 3-5 times, and then return to Park.
2. Move wiper switch to DELAY position. Move wiper switch through delay range. Wipers should make one complete sweep, then pause for 1-22 seconds (depending on delay setting) before making next sweep.
3. Leave wiper switch in DELAY position. Press and release washer button. Washer should spray windshield for as long as button is held. Wipers should run at low speed for 3-5 sweeps after button is released, and then return to pulse mode.
4. Move wiper switch to LOW position. Wipers should operate continuously at low speed. Move wiper switch to HIGH position. Wipers should operate continuously at high speed.
5. Move wiper switch to OFF position. Wipers should return to Park at low speed. Move wiper switch to MIST position, and then release. Wipers should make one complete sweep at low speed, and then Park. If wiper system does not function properly, perform appropriate symptom test. See **SYMPTOM INDEX** table under SYSTEM TESTS.

Rear Wiper System

1. Push rear window washer switch to WASH position. Washer should spray until switch

is released. Wiper should continue to operate for about 3 cycles.

2. Turn wiper/washer switch to LOW position. Wiper should operate with about a 5 second delay between wipe cycles.
3. Turn wiper/washer switch to HIGH position. Wiper should operate constantly at a faster speed. If wiper system does not function properly, perform appropriate symptom test. See **SYMPTOM INDEX** table under SYSTEM TESTS.

SYSTEM TESTS

NOTE: Before testing, perform system operation check. See **SYSTEM OPERATION CHECK** under **TROUBLE SHOOTING**.

SYMPTOM INDEX

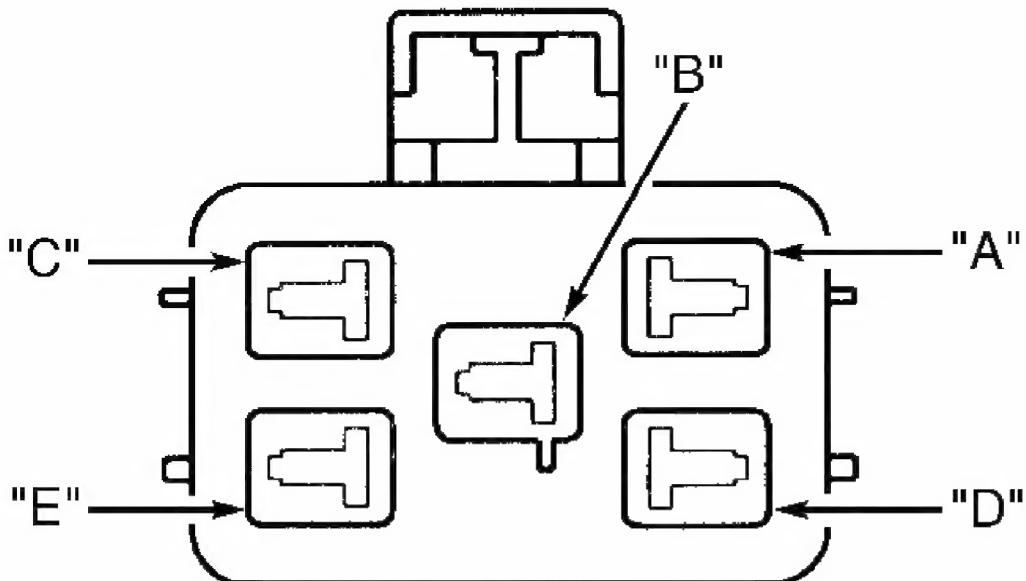
Symptom	Perform Test
Front Wipers Inoperative In All Modes	<u>A</u>
Front Wipers Do Not Turn Off	<u>B</u>
Front Wipers Inoperative In One Or More Modes	<u>C</u>
Front Wipers Do Not Park In OFF Position	<u>D</u>
Front Windshield Washer Inoperative	<u>E</u>
Rear Window Washer Inoperative	<u>F</u>
Rear Window Wiper Inoperative	<u>G</u>
Rear Window Delay Mode Inoperative	<u>H</u>

TEST A: FRONT WIPERS INOPERATIVE IN ALL MODES

1. If wiper/washer system description and operation was reviewed, go to next step. If wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under **DESCRIPTION & OPERATION**.
2. Turn ignition on, engine off. Turn windshield wiper/washer through all switch positions. If wipers/washer operate correctly, check for and repair intermittent problem. If wipers do not operate correctly, go to next step.
3. Disconnect windshield wiper motor connector P100. Using a test light connected to ground, test terminal "C" (Yellow wire) for power. If test light illuminates, go to next step. If test light does not illuminate, go to step 7.
4. Connect test light between terminal "C" (Yellow wire) and terminal "B" (Black wire) of windshield wiper motor connector P100. If test light illuminates, go to next step. If test light does not illuminate, go to step 8.
5. Using test light connected to ground, test terminal "A" (Dark Green wire) for power. Activate windshield washer switch. If test light illuminates, go to step 10. If test light does not illuminate, go to next step.
6. Disconnect windshield wiper/washer switch connector. Using test light connected to

ground, test terminal "E4" (Yellow wire) for power. If test light illuminates, go to step 11. If test light does not illuminate, go to step 9.

7. Repair open in windshield wiper motor accessory voltage circuit (Yellow wire). See **Fig. 1**. After completing repair, go to step 12.
8. Repair open in windshield wiper motor ground circuit (Black wire). After completing repair, go to step 12.
9. Repair open in windshield wiper/washer switch accessory voltage circuit (Yellow wire). After completing repair, go to step 12.
10. Replace windshield wiper motor. See **WIPER MOTOR** under REMOVAL & INSTALLATION.
11. Replace windshield wiper/washer switch. See appropriate STEERING COLUMN SWITCHES article. Go to next step.
12. Operate system to verify repair. If problem has been corrected, system is okay. If problem has not been corrected, go to step 3.



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Fig. 1: Identifying 5-Pin Wiper Motor Connector Terminals
Courtesy of GENERAL MOTORS CORP.

TEST B: FRONT WIPERS DO NOT TURN OFF

1. If wiper/washer system description and operation was reviewed, go to next step. If

wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under DESCRIPTION & OPERATION.

2. Turn ignition on, engine off. Turn wiper switch to LO position. Turn wiper/washer switch to HI position. Turn wiper/washer switch to OFF position. If windshield wipers operate correctly, check for and repair intermittent problem. If windshield wipers do not operate correctly, go to next step.
3. Disconnect wiper/washer switch connector. If windshield wipers stop, go to step 5 . If wipers do not stop, go to next step.
4. Check windshield wiper/washer switch ON signal circuit (Dark Green wire), windshield wiper switch low/pulse circuit (Gray wire), and windshield wiper motor high speed circuit (Purple wire) for short to voltage. If problem is found, repair as necessary and then go to step 7 . If problem is not found, go to step 6 .
5. Replace windshield wiper/washer switch. See appropriate STEERING COLUMN SWITCHES article. After completing repair, go to step 7 .
6. Replace wiper motor module. See **WIPER MOTOR MODULE (FRONT)** under REMOVAL & INSTALLATION. After completing repairs, go to next step.
7. Operate system in order to verify repair. If problem has been corrected, system is okay. If problem has not been corrected, go to step 3 .

TEST C: FRONT WIPERS INOPERATIVE IN ONE OR MORE MODES

1. If wiper/washer system description and operation was reviewed, go to next step. If wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under DESCRIPTION & OPERATION.
2. Turn ignition on, engine off. Turn windshield wiper/washer switch through all switch positions. If windshield wipers operate correctly in all modes, check for and repair intermittent problem. If windshield wipers do not operate correctly in all modes, go to next step.
3. Disconnect windshield wiper/washer switch connector. Using DVOM, measure resistance between terminal "E4"(Yellow wire) and terminal "E5"(Gray wire). Turn wiper/washer switch to MIST, LO, and HI. If resistance is greater than 2 ohms, go to step 10 . If resistance is 2 ohms or less, go to next step.
4. Using DVOM, measure resistance between terminal "E4"(Yellow wire) and terminal "E5"(Gray wire) of wiper/washer switch. Turn wiper/washer switch through DELAY range. If resistance is not 39K-680K ohms, go to step 10 . If resistance is 39K-680K ohms, go to next step.
5. Using DVOM, measure resistance between terminal "E4"(Yellow wire) and terminal "E8"(Dark Green wire) of wiper/washer switch. Turn wiper/washer switch to MIST, DELAY, LO, and HI. If resistance is near 24K ohms, go to next step. If resistance is not near 24K ohms, go to step 10 .
6. Reconnect windshield wiper/washer switch connector. Turn windshield wiper/washer switch to HI position. If wipers operate properly in HI mode, go to next step. If wipers

do not operate properly in HI mode, go to step 9 .

7. Check windshield wiper switch low/pulse signal circuit (Gray wire) for high resistance or an open. If problem is found, repair as necessary and then go to step 13 . If problem is not found, go to next step.
8. Check wiper switch on signal circuit (Dark Green wire) for high resistance or an open. If problem is found, repair as necessary and then go to step 13 . If problem is not found, go to step 11 .
9. Check windshield wiper motor high speed circuit (Purple wire) for high resistance or an open. If problem is found, repair as necessary and then go to step 13 . If problem is not found, go to step 12 .
10. Replace windshield wiper/washer switch. See appropriate STEERING COLUMN SWITCHES article. After completing repairs, go to step 13 .
11. Replace windshield wiper module. See **WIPER MOTOR MODULE (FRONT)** under REMOVAL & INSTALLATION. After completing repairs, go to step 13
12. Replace windshield wiper motor. See **WIPER MOTOR** under REMOVAL & INSTALLATION. After completing repairs, go to next step.
13. Operate wiper/washer system and inspect for proper operation. If problem has been corrected, system is okay. If problem has not been corrected, go to step 3 .

TEST D: FRONT WIPERS DO NOT PARK IN OFF POSITION

1. If wiper/washer system description and operation was reviewed, go to next step. If wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under DESCRIPTION & OPERATION.
2. Turn ignition on, engine off. Turn windshield wiper/washer switch to HI position. Turn windshield wiper/washer switch to OFF position. If wipers park properly, check for and repair intermittent problem. If wipers do not park properly, go to next step.
3. Disconnect windshield wiper/washer switch connector. If wipers park properly, go to next step. If wipers do not park properly, go to step 5 .
4. Replace windshield wiper/washer switch. See appropriate STEERING COLUMN SWITCHES article. After completing repairs, go to step 8 .
5. Check windshield wiper switch on signal circuit (Dark Green wire) for a short to voltage. If problem was found, repair as necessary and then go to step 8 . If problem was not found, go to next step.
6. Check windshield wiper switch low/pulse signal circuit (Gray wire) for a short to voltage. If problem is found, repair as necessary and then go to step 8 . If problem is not found, go to next step.
7. Replace wiper motor module. See **WIPER MOTOR MODULE (FRONT)** under REMOVAL & INSTALLATION. After completing repair, go to next step.
8. Operate system in order to verify repair. If problem has been corrected, system is okay. If problem has not been corrected, go to step 3 .

TEST E: FRONT WINDSHIELD WASHER INOPERATIVE

1. If wiper/washer system description and operation was reviewed, go to next step. If wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under **DESCRIPTION & OPERATION**.
2. Turn ignition on, engine off. Activate windshield washer switch. If windshield washer operates correctly, check for and repair intermittent problem. If washer system does not operate correctly, go to next step.
3. Disconnect washer pump connector. Connect test light between terminals "A" (Red wire) and "B" (Black wire) of washer pump connector. Activate washer switch. If test light illuminates, go to step 7 . If test light does not illuminate, go to next step.
4. Check windshield washer pump ground circuit (Black wire) for high resistance or an open. If problem is found, repair as necessary and then go to step 8 . If problem is not found, go to next step.
5. Check windshield washer pump control circuit (Red wire) for high resistance, short to ground or an open. If problem is found, repair as necessary and then go to step 8 . If problem is not found, go to next step.
6. Replace wiper/washer switch. See appropriate **STEERING COLUMN SWITCHES** article. After completing repairs, go to step 8 .
7. Replace windshield washer pump. After completing repairs, go to next step.
8. Operate system in order to verify repair. If problem has been corrected, system is okay. If problem has not been corrected, go to step 3 .

TEST F: REAR WINDOW WASHER INOPERATIVE

1. If wiper/washer system description and operation was reviewed, go to next step. If wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under **DESCRIPTION & OPERATION**.
2. Check washer solvent tank for proper fluid level. If problem is found, fill tank and go to step 13 . If problem is not found, go to next step.
3. Check for pinched, kinked, or disconnected washer hoses. If problem is found, repair as necessary and then go to step 13 . If problem is not found, go to next step.
4. Check for a clogged windshield washer nozzle. If problem is found, repair as necessary and then go to step 13 . If problem is not found, go to next step.
5. Check for an open RR WPR/WSHR fuse. If problem is found, repair as necessary and then go to step 13 . If problem is not found, go to next step.
6. Disconnect washer pump connector. Turn ignition switch to ON position. Connect test light between terminals "A" and "B" of washer pump harness connector. Activate washer switch while observing test light. If test light illuminates, go to next step. If test light does not illuminate, go to step 9 .
7. Check for poor connection at washer pump connector. If problem is found, repair as

necessary and then go to step 13 . If problem is not found, go to next step.

8. Replace rear washer pump. After completing repairs, go to step 13 .
9. Using test light connected to ground, probe washer pump harness connector terminal "A" (Red wire). Activate washer switch while observing test light. If test light illuminates, go to next step. If test light does not illuminate, go to step 11 .
10. Repair open in ground circuit (Black wire). After completing repairs, go to step 13 .
11. Check for an open in rear window washer pump control circuit (Red wire). If problem was found, repair as necessary and then go to step 13 . If problem was not found, go to next step.
12. Replace rear wiper/washer switch. See **WIPER/WASHER SWITCH** under **REMOVAL & INSTALLATION**. After completing repairs, go to next step.
13. Operate system in order to verify repair. If problem has been corrected, system is okay. If problem has not been corrected, go to step 2 .

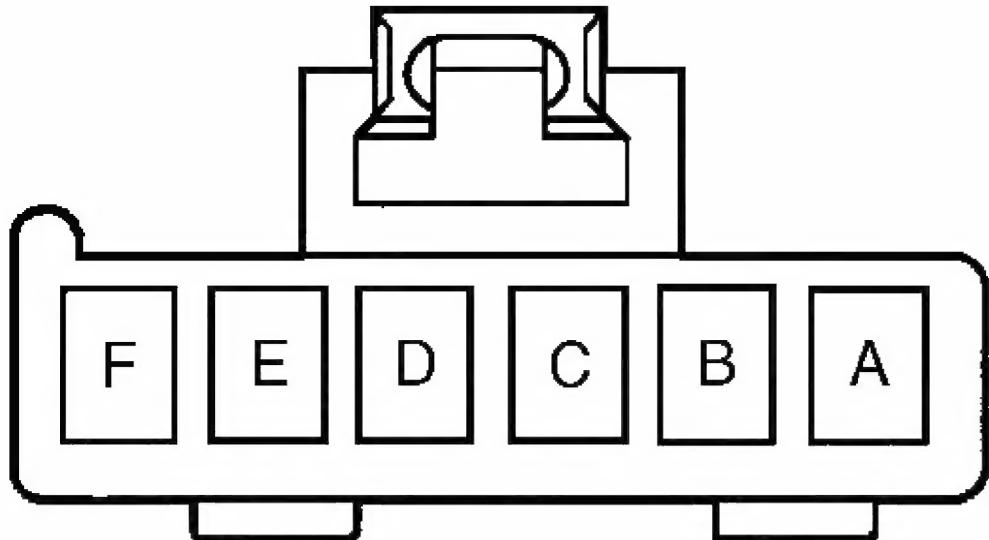
TEST G: REAR WINDOW WIPER INOPERATIVE

1. If wiper/washer system description and operation was reviewed, go to next step. If wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under **DESCRIPTION & OPERATION**.
2. Turn ignition switch to RUN position. Using test light connected to ground, backprobe rear wiper/washer switch connector terminal "A" (Yellow wire). If test light illuminates, go to step 5 . If test light does not illuminate, go to next step.
3. Check for open at RR WPR/WSHR fuse. If problem is found, repair and go to step 16 . If problem is not found, go to next step.
4. Repair open in rear window wiper motor control circuit (Gray wire). See **WIRING DIAGRAMS** . After completing repair, go to step16 .
5. Set rear wiper/washer switch to DELAY. Using test light connected to ground, backprobe rear wiper/washer switch connector terminal "C" (Gray wire). If test light illuminates, go to step 8 . If test light does not illuminate, go to next step.
6. Check for poor connection at rear wiper/washer switch connector. If problem is found, repair and go to step 16 . If problem is not found, go to next step.
7. Replace rear wiper/washer switch. See **WIPER/WASHER SWITCH** under **REMOVAL & INSTALLATION**. After completing repair, go to step 16
8. Using test light connected to ground, backprobe rear wiper motor connector terminal "D" (Dark Green wire). See **Fig. 3** . If test light illuminates, go to step 10 . If test light does not illuminate, go to next step.
9. Repair open in rear window wiper switch signal circuit (Gray wire). After completing repair, go to step 16 .
10. Using test light connected to ground, backprobe rear wiper motor connector terminal "C" (Orange wire). See **Fig. 3** If test light illuminates, go to step 12 . If test light does not illuminate, go to next step.

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11. Repair open in rear window wiper control circuit (Gray wire). After completing repair, go to step 16 .
12. Using test light, backprobe terminals "A" (Black wire) to "C" (Orange wire) of rear wiper motor connector. See **Fig. 3** If test light illuminates, go to step 14 . If test light does not illuminate, go to next step.
13. Repair open in ground circuit. After completing repair, go to step 16 .
14. Check for poor connection at rear wiper motor. If problem was found, repair and go to step 16 . If problem was not found, go to next step.
15. Replace rear wiper motor. See **WIPER MOTOR** under REMOVAL & INSTALLATION. Go to next step.
16. Operate system to verify repair. If problem has been corrected, system is okay. If problem has not been corrected, go to step 2 .



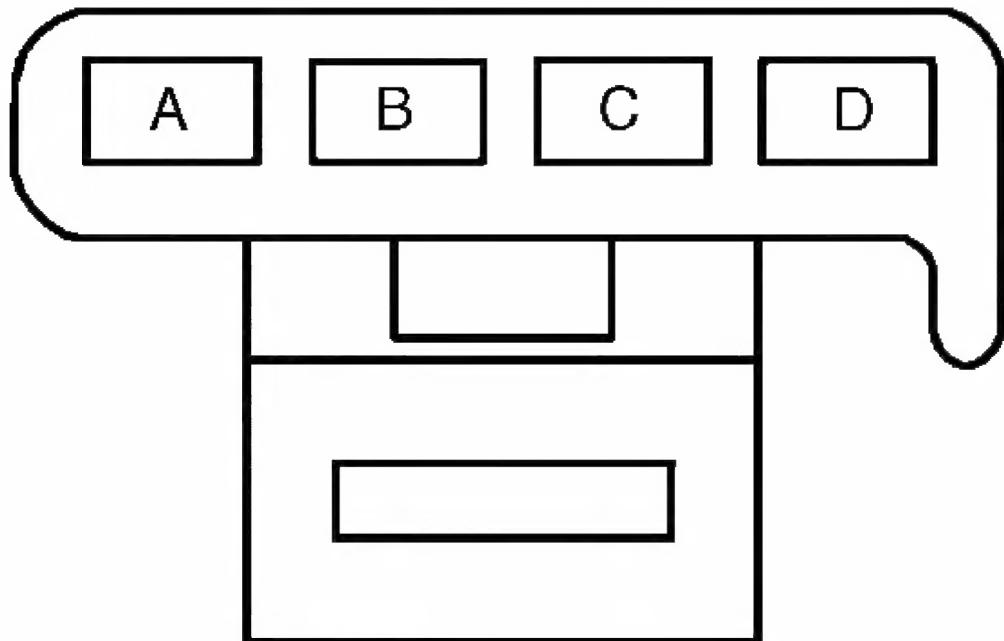
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Fig. 2: Identifying Rear Wiper/Washer Switch & Endgate Window Release Switch Connector Terminals

Courtesy of GENERAL MOTORS CORP.

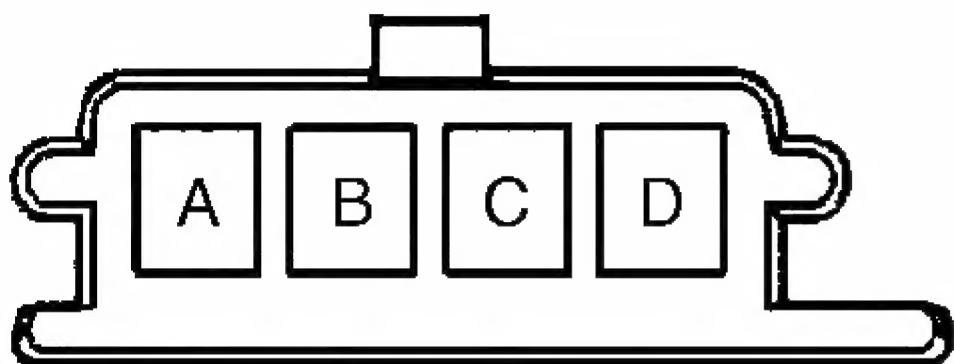
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Fig. 3: Identifying 4-Pin Rear Wiper Motor Connector Terminals
Courtesy of GENERAL MOTORS CORP.



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Fig. 4: Identifying Rear Wiper Cut-out & Liftglass Ajar Jamb Switch Terminals (Utility)

Courtesy of GENERAL MOTORS CORP.

TEST H: REAR WINDOW DELAY MODE INOPERATIVE

1. If wiper/washer system description and operation was reviewed, go to next step. If wiper/washer system description and operation was not reviewed, see **FRONT WIPER/WASHER SYSTEM** under DESCRIPTION & OPERATION.
2. Turn ignition switch to RUN position. Turn rear wiper/washer switch to LO position. Using a test light connected to ground, backprobe rear wiper/washer switch connector terminal "C" (Gray wire). See **Fig. 2** . If test light is illuminated, go to next step. If test light is not illuminated, go to step 4 .
3. Using a test light connected to ground, backprobe rear wiper motor connector terminal "B" (White wire). See **Fig. 3** . If test light is illuminated, go to step 5 . If test light is not illuminated, go to step 6 .
4. Replace rear wiper/washer switch. See **WIPER/WASHER SWITCH** under REMOVAL & INSTALLATION. After making repair, go to step 7 .
5. Replace rear wiper motor. See **WIPER MOTOR** under REMOVAL & INSTALLATION. After making repair, go to step 7 .
6. Repair poor connection or high resistance in Dark Green or Gray wires between rear wiper/washer switch and rear wiper motor or defective rear window wiper cutout switch. See **WIRING DIAGRAMS** .
7. Operate system in order to verify repair. If problem has been corrected, system is okay. If problem has not been corrected, go to **TROUBLE SHOOTING** .

REMOVAL & INSTALLATION

WARNING: Vehicles are equipped with air bag supplemental restraint system. Before attempting ANY repairs involving steering column, instrument panel or related components, see SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM in appropriate AIR BAG RESTRAINT SYSTEMS article.

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting battery.

Removal & Installation

1. Open endgate. Remove screws that retain inside handle to endgate. Remove endgate inside handle from endgate. Remove screw that retains endgate trim panel to endgate window latch support. Remove screws that retain endgate trim panel to endgate. Release retaining clips from upper edge and sides of trim panel. Lift panel up in order to release tabs along bottom edge. Remove endgate trim panel from endgate.
2. To install, reverse removal procedure. Tighten screws that retain endgate trim panel to endgate to 17 INCH lbs.(1.9 N.m). Tighten screw that retains endgate trim panel to endgate window latch support to 17 INCH lbs.(1.9 N.m). Install endgate inside handle to endgate. Tighten handle screws to 25 INCH lbs. (2.8 N.m).

LIFTGATE TRIM PANEL**Removal & Installation**

Open liftgate window. Remove screw retaining liftgate trim panel to liftgate window latch support. Open liftgate. Remove pullstrap. Remove trim panel from liftgate. To install, reverse removal procedure. Tighten trim panel screws to 17 INCH lbs.(1.9 N.m).

WIPER MOTOR**Removal & Installation (Front)**

1. Disconnect negative battery cable. Remove wiper arms. Remove cowl vent grille and screen. Disconnect wiper motor electrical connector. Using Wiper Transmission Separator (J-39232), remove transmission from wiper motor drive link. See **Fig. 5**. Remove wiper motor mounting screws. Remove wiper motor.
2. To install, reverse removal procedure. Lubricate drive link socket with lithium grease. Install transmission to motor drive link using Wiper Transmission Installer (J-39529). Ensure transmission is assembled to drive link past second detent so that seal is compressed to a maximum height of 1" (25 mm). Tighten wiper motor mounting screws to 57 INCH lbs. (6.5 N.m).

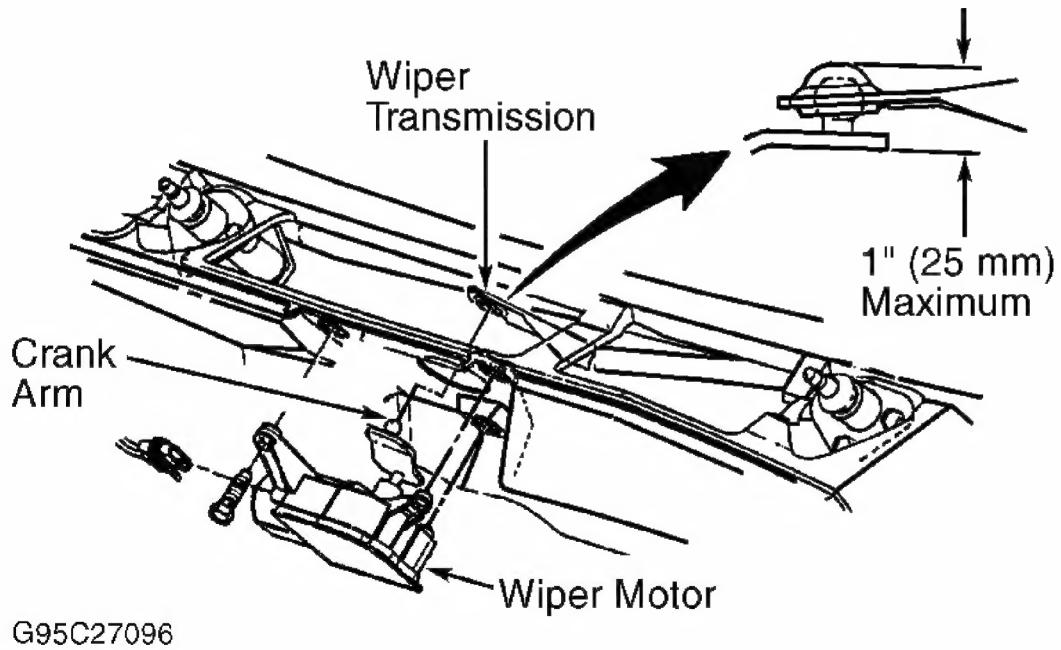
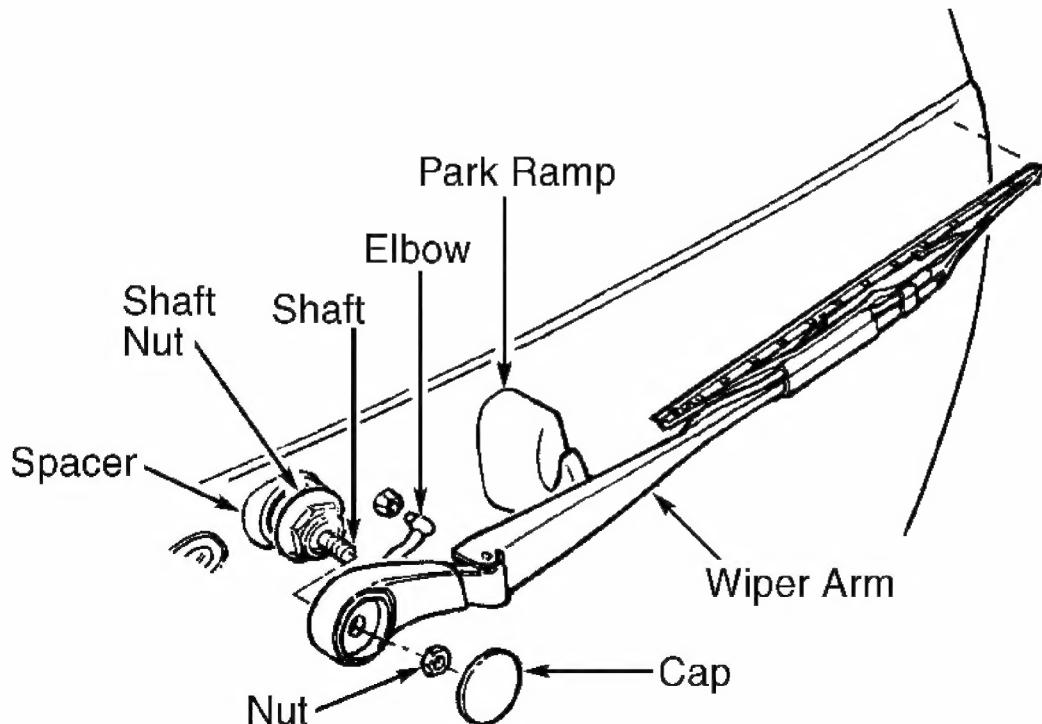


Fig. 5: Removing & Installing Front Wiper Motor
Courtesy of GENERAL MOTORS CORP.

Removal & Installation (Rear)

1. Disconnect negative battery cable. Disconnect washer hose elbow. Remove wiper arm cap and nut. See [Fig. 6](#). Remove wiper arm. Remove nut and spacer from wiper motor shaft. Remove tailgate interior panel. Disconnect wiper motor electrical connector. Remove wiper motor mounting screws. Remove wiper motor.
2. To install, reverse removal procedure. Tighten wiper motor mounting screws to 57 INCH lbs. (6.5 N.m). Tighten wiper motor shaft nut to 70 INCH lbs. (8 N.m). Tighten wiper arm nut to 17 ft. lbs. (23 N.m).



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Fig. 6: Removing & Installing Rear Wiper Arm
Courtesy of GENERAL MOTORS CORP.

WIPER MOTOR MODULE (FRONT)

Removal & Installation

Disconnect negative battery cable. Remove wiper motor cover screws. Remove wiper motor cover. Pull circuit board from wiper motor. To install, reverse removal procedure. Tighten wiper motor cover screws to 23 INCH lbs. (2.6 N.m).

WIPER/WASHER SWITCH

Removal & Installation (Front)

Wiper/washer switch is an integral part of multifunction switch. See appropriate STEERING COLUMN SWITCHES article.

Removal & Installation (Rear)

Disconnect negative battery cable. Remove wiper/washer switch from trim plate. Disconnect harness connector. To install, reverse removal procedure.

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WIRING DIAGRAMS

Fig. 7: Front Wiper/Washer System Wiring Diagram (Blazer, Bravada, Jimmy,

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Sonoma & S10 Pickup)

Fig. 8: Rear Wiper/Washer System Wiring Diagram (Blazer, Bravada, & Jimmy)